

What Is Claimed Is:

DWJ

1. A disposable aerosol generator for use with an inhaler device which includes a heater adapted to volatilize fluid stored in the disposable aerosol generator, comprising:

5 a disposable body including a sealed chamber and an outlet, the disposable body including first and second layers of material defining the chamber, the chamber accommodating a predetermined volume of a fluid which is expelled through the outlet when the fluid in the chamber is volatilized by the heater.

10 2. The aerosol generator according to Claim 1, wherein the outlet is located at an end of a flow passage located between the first and second layers of material.

15 *DWJ* 3. The aerosol generator according to Claim 1, wherein the disposable body includes a series of spaced apart aerosol generators, the disposable body being configured to fit in the inhaler device so as to allow advancement of each respective aerosol generator to a release position at which the heater can heat the fluid in the chamber of the respective aerosol generator.

4. The aerosol generator according to Claim 3, wherein each of the aerosol generators includes an outlet located at the end of a flow passage, the flow passage of each aerosol generator being located between the first and second layers

20 5. The aerosol generator according to Claim 1, wherein the first layer of material comprises an injection molded polymer material wherein the chamber comprises a recess in the polymer material.

6. The aerosol generator according to Claim 1, wherein the first layer of material comprises a polymer material and the second layer of material comprises a foil layer heat sealed to the polymer layer.

7. The aerosol generator according to Claim 6, wherein the outlet is 5 located at an end of a flow passage extending from the chamber, the flow passage comprising a channel in the polymer layer.

8. The aerosol generator according to Claim 1, wherein the disposable body comprises a disc which includes a series of spaced apart aerosol generators, the chamber of each respective aerosol generator being located adjacent an outer 10 portion of the disc and the outlet of each respective aerosol generator being located adjacent a central portion of the disc.

9. The aerosol generator according to Claim 2, wherein the flow passage comprises a rectilinear channel having a width of 0.01 to 10 mm and a length of at 15 least 5 mm.

10. An inhaler device usable with the disposable aerosol generator according to Claim 1, wherein the inhaler device includes a heater arranged to heat the fluid in the chamber so as to expel volatilized fluid from the outlet.

11. The inhaler device according to Claim 10, wherein the heater 20 comprises an electrical resistance heater.

12. The inhaler device according to Claim 11, wherein the heater comprises a layer of resistance heating material on a substrate, the substrate including an opening located adjacent the outlet.

Dkt 1
B9

13. The inhaler device according to Claim 12, further comprising an opening device, the opening device being adapted to pierce the first layer and/or second layer and form the outlet.

14. The inhaler device according to Claim 13, wherein the opening device 5 includes a solenoid activated piercing element, the piercing element including a movable tip which is located in the opening in the substrate, the tip being moved upon actuation of the piercing element such that the tip penetrates the first layer of the disposable body.

Dkt 1
B10

15. The inhaler device according to Claim 10, wherein the disposable body 10 is movably supported such that the chamber can be moved to a release position at which the heater can heat the fluid in the chamber sufficiently to volatilize the fluid and expel the volatilized fluid through the outlet.

16. The inhaler device according to Claim 12, wherein the layer of 15 resistance heating material comprises a strip arranged in a pattern which is coextensive with the size of the chamber.

Dkt 1

17. The inhaler device according to Claim 10, further comprising a dispensing member located adjacent the outlet of the aerosol generator, the volatilized fluid expelled from the outlet passing through a passage in the dispensing member.

20 18. The inhaler device according to Claim 10, wherein the disposable body includes a series of spaced apart aerosol generators, the disposable body being configured to fit in the inhaler device so as to allow advancement of each

11
respective aerosol generator to a release position at which the heater can heat the fluid in the chamber of the respective aerosol generator.

5 19. The inhaler device according to Claim 18, wherein the first layer comprises a layer of injection molded polymer material and the second layer of material comprises a foil heat sealed to the polymer layer, the inhaler device including an opening member which is operable to pierce the foil layer to form the outlet immediately prior to when the heater is activated to volatilize the fluid in the chamber.

10 20. The inhaler device according to Claim 16, wherein the disposable body includes a flow passage extending rectilinearly from the chamber, the heater including a first portion arranged to heat the chamber and a second portion arranged to heat the flow passage, the first and second portions of the heater comprising a layer of resistance heating material configured such that the second portion of the heater becomes hotter than the first portion of the heater during actuation of the heater to volatilize the fluid in the chamber.

15 21. A method of forming an aerosol using the inhaler device according to Claim 11, comprising severing the first and/or second layer so as to form the outlet and activating the heater so as to volatilize the fluid in the chamber and expel the volatilized fluid through the outlet.

20 22. The method according to Claim 21, wherein the disposable body includes a series of spaced apart aerosol generators, the method including moving the disposable body relative to the inhaler device so as to locate a first one of the aerosol generators at a position where the heater can heat the fluid in the chamber of the first aerosol generator and volatilize the fluid therein.

5 *311 cont'd*
23. The method according to Claim 21, wherein the severing is carried out by driving a piercing member through the first and/or second layer, the outlet being located adjacent a passage of a dispensing member and the volatilized fluid formed by the heater being expelled into the passage after passing through the outlet.

10 24. The method according to Claim 23, wherein the disposable body includes a flow passage extending rectilinearly from the chamber, the heater including a first portion arranged to heat the chamber and a second portion arranged to heat the flow passage, the first and second portions of the heater comprising a layer of resistance heating material configured such that the second portion of the heater becomes hotter than the first portion of the heater during volatilization of the fluid in the chamber.

15 25. The aerosol generator according to Claim 1, wherein the sealed chamber comprises a reservoir in a lower surface of the disposable body and a flow passage in an upper surface of the disposable body, the flow passage being in fluid communication with the reservoir.

20 26. The aerosol generator according to Claim 25, wherein a first layer of material on the lower surface covers the reservoir and a second layer of material on the upper surface covers the flow passage, the disposable body comprising a polymer material, the first layer of material comprising a polymer film and the second layer of material comprising a heat resistant material.

27. The aerosol generator according to Claim 25, wherein the disposable body comprises a circular body with a plurality of sealed chambers, the circular body including gear teeth on an outer periphery thereof.

28. The inhaler device according to Claim 13, wherein the opening device is fixedly attached to a portion of the inhaler device and the inhaler device includes a lifting mechanism which moves the disposable body into engagement with the opening device so as to form the outlet.

5 29. The inhaler device according to Claim 10, wherein the inhaler device comprises a housing and a cover, the cover being movable with respect to the housing so as to permit insertion of the disposable body in the inhaler device when the cover is in an open position.

Sub 1 30. The inhaler device according to Claim 29, the heater is mounted on a lower surface of the cover, the housing further including a lifting mechanism which moves the disposable body into engagement with an opening device so as to form the outlet.

15 31. The inhaler device according to Claim 10, wherein the inhaler device includes a fluid delivery mechanism which engages the disposable body such that fluid in the chamber is forced out of the chamber, along a flow passage in the disposable body and toward the outlet, the heater being arranged to heat the liquid in the flow passage.

20 32. The inhaler device according to Claim 31, wherein the fluid delivery mechanism includes a piston movable towards and away from the disposable body such that engagement of the disposable body with the piston forces liquid out of the chamber and into the flow passage at a substantially constant flow rate.

33. The inhaler device according to Claim 32, wherein the inhaler device includes a driven piston cam which presses the piston against the disposable body,

2000051551-1226702

the piston cam being mounted on a shaft which is rotated by a motor when the motor is supplied power from a power source.

Sub a2X

34. The inhaler device according to Claim 33, further comprising a lifting mechanism which moves the disposable body into engagement with an opening device so as to form the outlet, the lifting device including a spindle received in an opening in the disposable body and a spindle cam mounted on the shaft, spindle cam pressing the spindle against the disposable body during rotation of the shaft.

5 35. The inhaler device according to Claim 34, further comprising a gear wheel mounted on the shaft, the gear wheel engaging teeth on an outer periphery 10 of the disposable body and effecting rotation of the disposable body upon rotation of the shaft.

36. The inhaler device according to Claim 35, further comprising a controller operably connected to the motor, the power source and the heater so as to actuate the heater when fluid is forced out of the chamber by the piston.

15 37. A method of forming an aerosol using the inhaler device according to Claim 21, wherein the chamber is located on a lower surface of the disposable body and the outlet is located on an upper surface of the disposable body, the outlet being connected to the chamber by a flow passage in the upper surface of the disposable body, the method including a step of mechanically forcing fluid out of 20 the chamber so as to flow along the flow passage and activating the heater so as to volatilize the fluid in the flow passage and expel the volatilized fluid through the outlet.

38. The method according to Claim 37, wherein the fluid is forced out of the chamber by pressing a piston against the disposable body.

39. The method according to Claim 37, wherein the disposable body is
movable vertically toward and away from the heater, the method including a step
5 of moving the disposable body from a first position spaced vertically below the
heater to a second position in proximity to the heater prior to volatilizing the fluid
with the heater.